



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1230 Product Size: 20 XS Production Date: Sep 10, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000434
 Product Standards: ASME B36.10-2004, API SL-45th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010
 Product Markings: <API> SL-0898 API SPEC 5L NPS 20 XS 0.500 INCH WT GR B PSL1 SMLS 2013/09 NDE 1200PSI
 HEAT BSM-1230 (PIPE # LENGTH MASS) 104.1lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product: Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1200PSI/ 5 s	End Condition
BSM-1230	Heat	NPS 20 XS 0.500in. WT	8	DRL	104.1	<5	<10	Pass	Pass	Pass	Pass	-	Pass	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	NI	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1230	Blast Furnace: EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.82	0.013	0.008	0.30	0.06	0.01	0.01	0.04	0.002	0.003	0.001	0.0002	-	-
		Product	0.24	0.89	0.017	0.011	0.32	0.06	0.01	0.01	0.04	0.002	0.003	0.001	0.0002	0.41	0.41

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1230	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 38.1 mm x WT	42,900	73,500	0.58	44

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy						Lateral Expansion						
				J	J	J	AVG	%	%	AVG	mm	mm	mm	AVG		
BSM-1230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API SL-45th Ed., ASTM/ASME A/SA106-2011 Grade B/C A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2010 Section 2.1

✓ No weld repairs have been performed on this product.
 ✓ This product has not come into contact with mercury during the Bri-Steel Manufacturing processes.
 ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

2013 Sept 17

Kerton Dechant, P.Eng.
 Manager of Quality and R&D